6F

Land Retirement Analysis in Drainage-Impaired Areas

The San Joaquin Valley Interagency Drainage Program's 1990 report stated that 75,000 acres of land with the worst drainage problems would need to be retired by 2040 unless other actions were taken to improve drainage problems in the area. Assuming that land retirement would occur uniformly over time, the Bulletin's 2020 irrigated acreage forecast includes a reduction of 45,000 acres of land due to impaired drainage, as discussed in Chapter 4. Existing or future programs in which land is purchased and then taken out of irrigated agriculture could increase the acreage taken out of production. Considering the region's chronic agricultural water shortages, it is likely that local water agencies would want to keep the water in the region to improve water supplies for remaining irrigated lands, as is being planned in a pending joint financing arrangement between USBR and WWD.

Bulletin 160-98 does not treat land retirement for drainage purposes as a future demand reduction option. The Bulletin's scope is limited to actions whose primary intent is demand reduction or water supply augmentation. Because land retirement for drainage purposes would affect water use, the following analysis has been provided to quantify water supply impacts. Two land retirement scenarios were evaluated. Scenario 1 assumed that the full 75,000 acres of agricultural lands with the worst drainage problems recommended for retirement by 2040 by the interagency program would be retired by 2020, adding 30,000 acres to the base 45,000 acres included in the Department's 2020 agricultural acreage forecast. Scenario 2 assumed the retirement of up to 85,000 acres over the base 45,000 acres for a total of 130,000 retired acres. This included the 30,000 acres in Scenario 1 plus other lands in the westside of the San Joaquin Valley with a selenium concentration of more than 200 ppb in shallow groundwater. For Scenario 2, the 200 ppb selenium criterion was used to benchmark acreage to be retired because of the interagency report's recommendations. The acreage of land underlain by shallow groundwater has fluctuated over time, reflecting hydrologic conditions and the availability of water supplies in the region. There has been no new regionwide monitoring of selenium in shallow groundwater since publication of the 1990 report, and changes in the extent of lands underlain by high selenium groundwater are unknown. (As described in Chapter 4, the interagency drainage program is in the process of updating its 1990 recommendations based on new information.)

To help put these acreage values into perspective, in 1997 USBR's land retirement program issued its first request for proposals from persons who wished to retire land pursuant to the CVPIA program. USBR received proposals totaling 31,000 acres. Based on its 1998 budget, USBR expects to retire about 12,000 acres of the lands proposed, with additional lands expected to be retired in future budget years. In 1998, USBR released an environmental assessment and finding of no significant impact for a demonstration project on about 1,890 acres of lands acquired or planned to be acquired under the land retirement program. The demonstration program would evaluate wildlife habitat management actions on the retired lands. Under a separate agreement with WWD, the agricultural water supplies associated with the lands would remain within WWD, and part of the supplies would be used to irrigate wildlife habitat. Water used for habitat irri-

TABLE 6F-1

Agricultural Depletion Reductions Due to Land Retirement

Crops	*Scenario 1* *Land Retired (acres)*	*Scenario 1* *Depletions (af/yr)*	*Scenario 2* *Land Retired (acres)*	*Scenario 2* *Depletions (af/yr)*
Alfalfa	2,370	8,560	4,740	17,290
Irrigated Pasture	60	220	160	580
Barley	3,080	3,880	9,160	11,540
Wheat	5,850	8,660	14,980	22,170
Cotton	12,830	33,490	41,600	108,580
Safflower	4,390	4,430	9,690	9,790
Sugar Beets	60	170	350	990
Dry Beans	470	900	1,470	2,820
Dry Onions	190	500	520	1,370
Tomatoes (processing)	480	1,280	1,730	4,600
Almonds	110	360	220	690
Pistachios	10	20	80	240
Wine Grapes	100	220	250	550
Total (rounded)	**30,000**	**62,700**	**85,000**	**181,200**

gation would be limited to 0.6 af/acre, to avoid deep percolation of applied water.

Table 6F-1 displays the crops calculated to be retired for both scenarios along with the expected reductions in depletions. Field crops are the primary types of crops calculated to be retired, based on Central Valley Production Model results, with barley, wheat, cotton, and safflower comprising almost 90 percent of total retired acreage for each option.

The costs of land retirement scenarios are measured by the estimated costs to purchase farmland and remove it from irrigated agricultural production. Table 6F-2 shows land retirement costs for either permanently taking the farmland out of agricultural production or for taking it out of irrigated agricultural production.

Implementing land retirement programs can be controversial because of concerns about third-party impacts to those who do not benefit from sale of the land or its associated water supply. (Direct farm income losses to growers should be recovered through land purchase costs.) To illustrate the magnitude of potential third-party impacts, Tables 6F-3 and 6F-4 show economic effects of the land retirement scenarios. These effects would need to be addressed in environmental documentation for land retirement programs. Environmental documentation prepared to date for land retirement activities has not proposed specific mitigation measures for third-party economic impacts. There has thus been no basis for allocating costs in addition to the land purchase price to the costs shown in this analysis. Third-party impacts associated with managed land retirement programs on the westside of the San Joaquin Valley would be of particular concern to city and county governments in the area, because agricultural activities provide the dominant source of employment in many of the small rural communities on the westside.

TABLE 6F-2

Costs of Land Retirement (1995 Dollars)

Land Retirement Assumptions	*Scenario 1* *Total Cost Per Acre*	*Scenario 1* *Annualized Cost Per Acre*[a]	*Scenario 1* *Cost Per af of Depletions*	*Scenario 2* *Total Cost Per Acre*	*Scenario 2* *Annualized Cost Per Acre*[a]	*Scenario 2* *Cost Per af of Depletions*
With No Alternative Uses	1,550	121	55	1,760	138	63
With Grazing	1,420	111	51	1,640	128	59

[a] For a 25 year period and 6% discount rate.

Table 6F-3

Land Retirement Analysis—Scenario 1 Economic Impacts (1995 Dollars)

		Direct, Indirect, Induced Effects			
		Value of Production		*Employment*	
Crops	***Acres Retired***	***Regional[a] ($1,000)***	***Statewide ($1,000)***	***Regional[a] (person years)***	***Statewide (person years)***
Alfalfa	2,370	3,980	4,190	56	58
Irrigated Pasture	60	50	50	1	1
Barley	3,080	1,730	1,960	29	30
Wheat	5,850	5,180	5,510	73	77
Cotton	12,830	32,480	34,650	535	541
Safflower	4,390	3,670	4,000	59	61
Sugar Beets	60	120	120	2	2
Dry Beans	470	750	850	10	10
Dry Onions	190	500	540	7	7
Tomatoes (processing)	480	1,590	1,740	22	23
Almonds	110	710	770	14	14
Pistachios	10	70	70	1	1
Wine Grapes	100	500	560	10	10
Totals (rounded)	**30,000**	**51,300**	**55,000**	**820**	**830**

[a] Includes Fresno, Kern, and Kings Counties.

Table 6F-4

Land Retirement Analysis—Scenario 2 Economic Impacts (1995 Dollars)

		Direct, Indirect, Induced Effects			
		Value of Production		*Employment*	
Crops	***Acres Retired***	***Regional[a] ($1,000)***	***Statewide ($1,000)***	***Regional[a] (person years)***	***Statewide (person years)***
Alfalfa	4,790	8,050	8,460	114	118
Irrigated Pasture	160	120	130	2	2
Barley	9,160	5,140	5,840	86	88
Wheat	14,980	13,240	14,100	187	196
Cotton	41,600	105,300	112,350	1,735	1,756
Safflower	9,690	8,090	8,830	129	134
Sugar Beets	350	680	720	11	12
Dry Beans	1,470	1,920	2,180	32	33
Dry Onions	520	1,360	1,490	19	19
Tomatoes (processing)	1,730	5,740	6,280	80	81
Almonds	220	1,380	1,510	26	27
Pistachios	80	770	840	15	15
Wine Grapes	250	1,250	1,410	24	24
Totals (rounded)	**85,000**	**153,000**	**164,100**	**2,460**	**2,510**

[a] Includes Fresno, Kern, and Kings Counties.